



# ENTRY LEVEL ABILITIES EXAM STUDY GUIDE

AUSTIN FIRE DEPARTMENT

2023 FIREFIGHTER SELECTION PROCESS

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## **INTRODUCTION**

This study guide has been developed to help prepare you for the upcoming Austin Fire Department Entry Level Firefighter written exam process. This Entry Level Abilities written exam is the first step in the Entry Level Firefighter selection process for the Austin Fire Department and includes a pretest study period and an exam that includes approximately 90 questions.

This testing process is designed to measure abilities important to becoming a firefighter. Although some questions are placed in a firefighting context, this exam does not require candidates to have previous firefighting knowledge or experience.

The following sections will discuss general examination information, the exam components in detail, and the types of questions included in each component.

## **GENERAL WRITTEN EXAM INFORMATION**

AFD will notify you of your specific registration time. It is very important that you arrive at the test site early. Registration lines will be long, and you will not be allowed to register if you arrive late. It is also strongly recommended that you do not take any communication devices into the testing area.

After you register, you will be escorted into the testing room and assigned a seat. Once all candidates have been registered, the Entry Level Abilities Exam will begin. This exam includes a Pretest study period (explanation in a following section) and the actual exam. Once the test time elapses, your answer sheet and test booklet will be collected, and you will be escorted from the testing area. If you complete the exam before the time elapses, you will be allowed to leave when you finish.

Because of the large number of candidates testing, restroom lines could be very long. No one will be allowed to go to the restroom when test instructions are being

read, and there will be strict procedures to follow regarding the use of the restroom during test times.

## **WRITTEN EXAM COMPONENTS**

The **Entry Level Abilities Exam** includes a Pretest Study Booklet, Answer Sheet, and Entry Level Abilities Exam Booklet. The following abilities are assessed by this exam:

1. **Memory for Ideas:** Recalling the essence of previously studied material (e.g., the main point or topic of a paragraph). Rote recall of this material (e.g., specific words or sentences) is not required. Responses may be either written or oral.
2. **Associative Memory:** Recalling or reproducing items of information arbitrarily paired. Item groupings have no obvious relationship between them and no logical way of getting from item to the other except by memorization. Firefighters use associative memory to learn signal codes, the interpretation of fire conditions (fumes, color of smoke), and the numeric identifiers of hazardous material classes (#8 is Corrosive).
3. **Mathematical Computation (Numeric Facility):** Ability to add, subtract, multiply, or divide quickly and correctly.
4. **Mathematical Reasoning:** Ability to apply math to solving test questions involving charts and tables.
5. **Mechanical Reasoning:** Mechanical reasoning, also known as mechanical aptitude, is measured by the degree of familiarity with everyday physical objects, tools, and devices, especially their function, use, size, shape, weight, and appearance. Firefighters need to understand how certain tools and pieces of equipment work. They must be able to operate pumps and other complicated equipment and position ladders safely.
6. **Reading Comprehension (Written Comprehension):** Ability to read and understand information and ideas presented (in English) in work related documents and other written materials.
7. **Flexibility of Closure:** The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.
8. **Spatial Orientation:** Ability to know your location in relation to the environment or to know where other objects are in relation to you. Firefighters need to know the relative position of their body parts or their location in a building when visibility is limited because of smoke.

9. **Risk Assessment (Spatial Scanning):** Necessitates rapid visual exploration of a wide or complicated spatial field to foresee consequences for each step taken. May be considered visual planning. Selecting the one best series of steps from all possible steps

**Specific examples of questions will be explained starting on page 6.**

Be prepared to be at the test site for up to 6 hours. The administration of the exam is structured as follows:

1. Registration – You will receive an arm band at registration that lists an identification number that will be used to complete your answer sheet.
2. Completion of the Answer Sheet – The administrator will guide you in completing your answer sheet before the Pretest Study Period to ensure a smooth transition into the exam.
3. Pretest Study Period – You will be presented with the Pretest Study Booklet to read, study, and memorize material associated with the exam. You will be allowed twenty-five (25) minutes to study and memorize the material presented in the Pretest Study booklet. You **MAY** write in this booklet. However, you must turn in the booklet at the end of the Pretest study period. The material that must be learned and committed to memory typically contains written procedures, diagrams, and pictures. After the study period has ended, the Pretest Study booklets are collected, and the Entry Level Abilities Exam booklets are passed out.
4. Entry Level Abilities Exam – You will be allowed two (2) hours and thirty (30) minutes to complete this exam. You **MAY** write in the test booklet.

## ANSWER SHEET BASICS

You will be provided with an answer sheet. All the questions from each test are multiple choice in format. You will be required to darken in the answer for each question. An example that is included in the test day's general instructions has been provided on the next page for your review.

### Questions in Test Booklet

1. A major responsibility of firefighters is to:
- give speeches.
  - repair water leakages.
  - direct traffic.
  - fight fires.

### Items on Answer Sheet

1.   Ⓐ Ⓑ Ⓒ ● Ⓓ Ⓕ Ⓖ Ⓗ

Answer "d" is the best answer and bubble "d" has been darkened to show this.

*When completing your answer sheet:*

- FILL IN THE BUBBLE COMPLETELY. THE COMPUTER MAY NOT SCORE YOUR ANSWER CORRECTLY IF THE BUBBLE IS PARTIALLY FILLED.
- IF YOU ERASE AN ANSWER, BE SURE TO ERASE IT COMPLETELY.
- USE A #2 PENCIL ONLY.
- WHEN MARKING AN ANSWER ON THE ANSWER SHEET, BE SURE THE ROW OF ANSWER BUBBLES IS NUMBERED THE SAME AS THE NUMBER OF THE QUESTION ON WHICH YOU ARE WORKING.
- DARKEN ONLY ONE (1) BUBBLE FOR EACH QUESTION. IF YOU DARKEN MORE THAN ONE (1) BUBBLE PER QUESTION, YOU WILL RECEIVE NO CREDIT FOR THAT QUESTION.

## **TYPES OF WRITTEN EXAM QUESTIONS**

The questions included in the written exam are designed to measure your basic cognitive abilities. In this section, we will list the type of questions and present sample questions to familiarize you with the different question formats. The asterisk (\*) indicates the correct answer for all sample questions.

### **Memorization (Memory for Ideas and Associative Memory)**

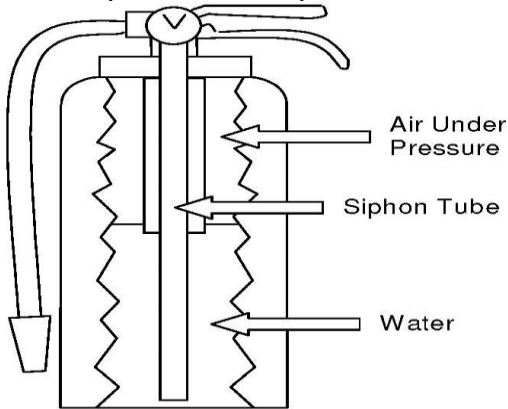
The Pretest Study Booklet includes written information, pictures, and diagrams that you will need to memorize to later answer questions in the Entry Level Abilities Exam Booklet. Being able to remember details of what is seen, heard, and read has always been a characteristic of a good firefighter. A firefighter must be able to remember the proper arrangement of equipment, routes in their assigned areas, and departmental procedures to prevent mishandling important duties for emergencies.

The Memorization information in the Entry Level Abilities Exam Booklet will be the first material from which you are tested for this exam. It is recommended that while memorizing the information in the Pretest Study Booklet, you use a method or plan and stay focused and attentive to the material. It may also be helpful to practice memorizing other material before the test.

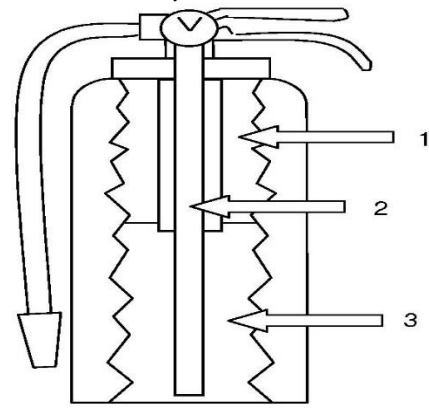
### Example Questions

#### Diagram I—Stored Pressure Water Extinguisher

Part 1 (from Pretest)



Part 2 (from Test Booklet)



Which of the following does the number 3 represent?

- \* a. water
- b. air
- c. air under pressure
- d. siphon tube

#### Hypothetical Fire Scene Passage from the Pretest Study Booklet

On August 22, 2023, at 3:50 p.m., a fire was reported at a senior living facility at 22 Cherry Road. Dispatch initially called out a regular alarm that consisted of two engines, one truck, and a battalion chief. Once firefighters arrived on scene at the 3-story apartment complex, Battalion Chief Carla Banks called for additional resources, and a second alarm was dispatched.

The fire originated in a center apartment on the 2<sup>nd</sup> floor. There is heavy smoke in the hallway, and fire is visible from second floor windows. All residents of the apartment complex have been safely evacuated with only minor injuries reported.

What was the name of the Battalion Chief who responded to the fire and called for additional resources?

- a. Carl Hanks
- b. Carlie Hanks
- \* c. Carla Banks
- d. Charlie Banks



## Reading Passages

A portion of the Entry Level Abilities Exam includes written passages sometimes placed in fire suppression context and questions that follow the passage. The intent is for you to demonstrate how well you understand what you read. Reading comprehension, or understanding what you read, is very important to your success both on the test and on the job. A firefighter at any level will have to read and interpret volumes of information. How well you use this ability will directly relate to how well you do your job.

## Example Passage and Questions

### Passage

Oftentimes, when one thinks of a firefighter, they immediately visualize a dog in their midst, specifically a Dalmatian. This is appropriate and with good reason. Although they are not as important today, in ages past, when fire trucks were pulled by horse drawn carriages, the Dalmatians' skills were very important. In order to help the fire department run at full strength, dogs were trained and used to help guide and direct the horses where to go when in route to a fire scene. Because of their friendly behavior, ease of being trained, and ability to look after themselves, Dalmatians became the dog of choice. Since fire trucks are now powered by gasoline, the dogs are no longer needed. However, for the sake of tradition, some can still be found in many fire houses across the country.

Answer the below questions based on the Passage above.

- According to the passage, dogs were often used to:
- a. provide firefighters with companionship.
  - b. protect the fire house.
  - \* c. guide and direct horses.
  - d. assist in rescues.

- Which one of the following would be the most accurate title for the passage?
- a. Man's Best Friend
  - b. Traditions
  - \* c. The Firehouse Dog
  - d. Training a Dalmatian

## **Mathematical Computation (Numeric Facility) and Reasoning**

These types of questions involve mathematical reasoning to understand a word problem and to figure out what information the word problem is attempting to elicit. After identifying data necessary to solve the problem, you must be able to manipulate the numbers to generate a correct response.

A calculator is not provided for your use during this portion of the exam. Therefore, you should practice developing these skills without the use of a calculator. The mathematical operations that are generally tested in this section of the exam usually involve addition, subtraction, multiplication, division, percentages, decimals, fractions, and simple algebra. Sometimes the exam presents a table of data, and the test taker must perform mathematical computations (numeric facility) on the data presented in the table.

Math is of extreme importance to firefighters because it helps them figure out necessary formulas, such as what size nozzle tip and what length of hose to use to fight a fire. Firefighters must also use formulas to compute various numbers such as the pounds per square inch of pressure needed to pump enough water onto a fire to extinguish it.

### **Example Questions**

1. Assume that, for safety, the base of a ladder must be placed at a distance equal to 25% of its length away from the base of a building. If the ladder is 20 feet tall, how far away from the base of the building should the ladder be placed?
  - a. 2 feet
  - \* b. 5 feet
  - c. 10 feet
  - d. 14 feet

2. Friction loss is the reduction of water pressure which occurs as water travels over distance and through any kind of restriction. Following is the formula for friction loss (FL) in a 2 ½ inch fire hose:

$$FL = 2Q^2 + Q \quad \text{where: } Q = \text{GPM}/100$$

Based on the information given above, what is the friction loss of a 2 ½ inch hose when the gallons per minute (GPM) is 185?

- \* a. 8.7  
b. 9.3  
c. 10.2  
d. 15.5

#### DEATHS ATTRIBUTED TO HOUSE FIRES

	District 1	District 2	District 3	District 4	District 5
2004	14	21	27	12	17
2003	17	24	33	17	16

In 2003 which of the following best describes the relative number of deaths attributed to house fires of District 2 compared to District 3?

- \* a. District 3 had 27% more deaths than District 2.  
b. District 3 had 72% less deaths than District 2.  
c. District 2 had 20% more deaths than District 3.  
d. District 2 had 72% less deaths than District 3.

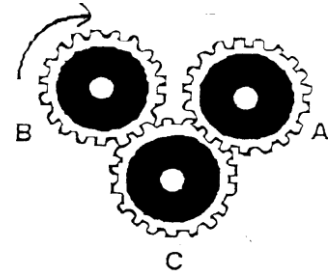
## Mechanical Reasoning

On this exam, you will be asked questions that deal with basic physical and mechanical principles. These questions could involve pulleys, gears, energy and power, motion, resistance, equilibrium, and fluidity.

Mechanical reasoning is important to firefighters because they must be able to understand how certain tools and pieces of equipment work. They must be able to operate pumps and other complicated equipment and position ladders.

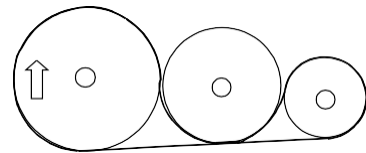
### Example Questions

According to the gears pictured to the right, if gear B is turned in the indicated direction:



- a. gear A will turn in a counterclockwise direction.
- b. gear C will turn in a clockwise direction.
- \* c. gears A and C will turn in opposite directions.
- d. gears A and B will turn in opposite directions.

If the largest wheel is moving clockwise, which of the following statements is true?



- \* a. The smallest wheel will be moving clockwise.
- b. The smallest wheel will be moving counterclockwise.
- c. The middle wheel will be moving clockwise.
- d. The middle wheel and the smallest wheel will be moving clockwise.

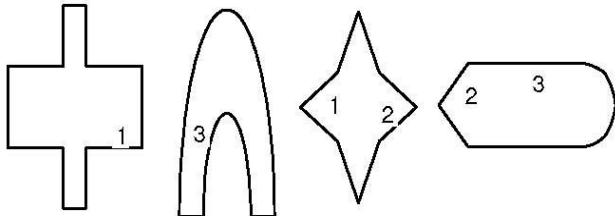
## **Spatial Orientation**

You will be presented with various shapes and will be required to mentally rotate and rearrange the shapes according to some given specifications or to fit them into a certain pattern. The objects that are to be mentally assembled appear at the beginning of each item and often will be marked with one or more numbers or letters which identify some particular place on the object. There will be four choices of how the objects could be put together. The correct choice is assembled with the matching numbers or letters put together or lined up. You must make the correct choice from the given arrangements. Only one of the choices is correct. The given objects may need to be flipped, turned, or rotated as appropriate.

When presented with these questions, it is helpful to examine each of the response choices individually, and within each response choice, examine each shape. It may be helpful to compare each shape of the response choices with the matching shape in the given figure. Look at the numbers or letters that label that shape in the figure. Carefully label that shape in the response choice with the same numbers or letters. After you do this for all of the shapes in the response choices, it will be much easier to see if the numbers or letters match. The response choice that has matching numbers or letters is the correct response choice.

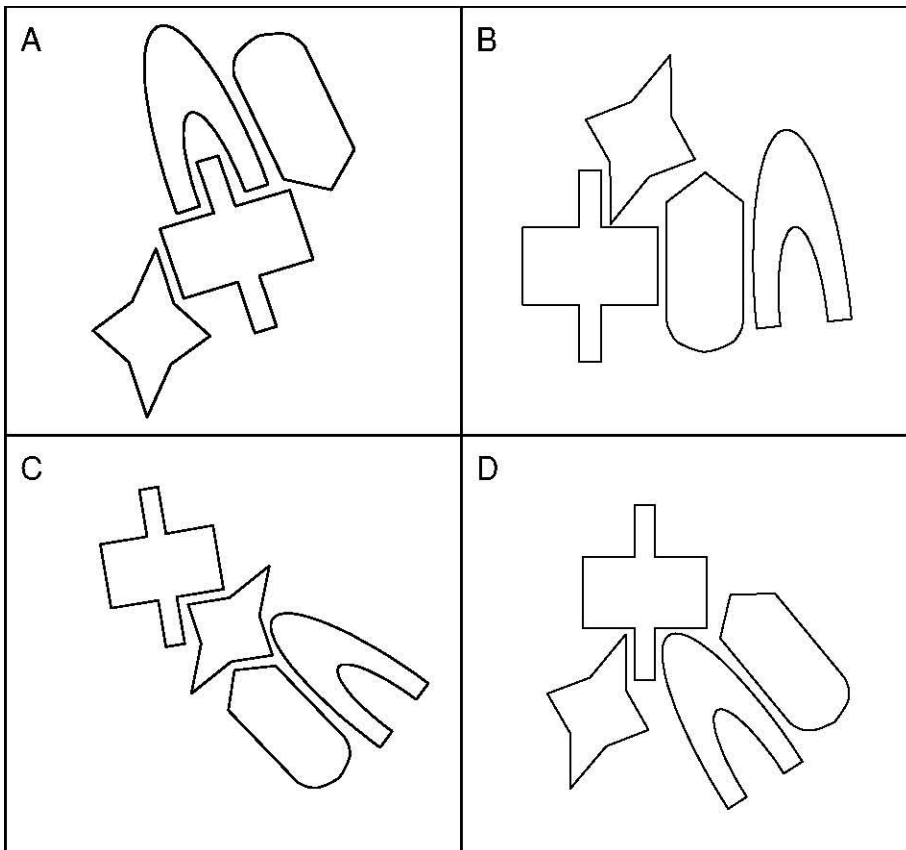
If you come across a response choice that seems to be correct, do not assume that it is in fact the correct choice. Continue this process of labeling the shapes for all of the response choices. It is possible that there is a better response choice. Also, if you continue to label the figures, you may discover an error that was made in labeling a previous response choice.

**Example Question**



Which of the choices below represents the parts above correctly assembled?

- a. A
- b. B
- \* c. C
- d. D



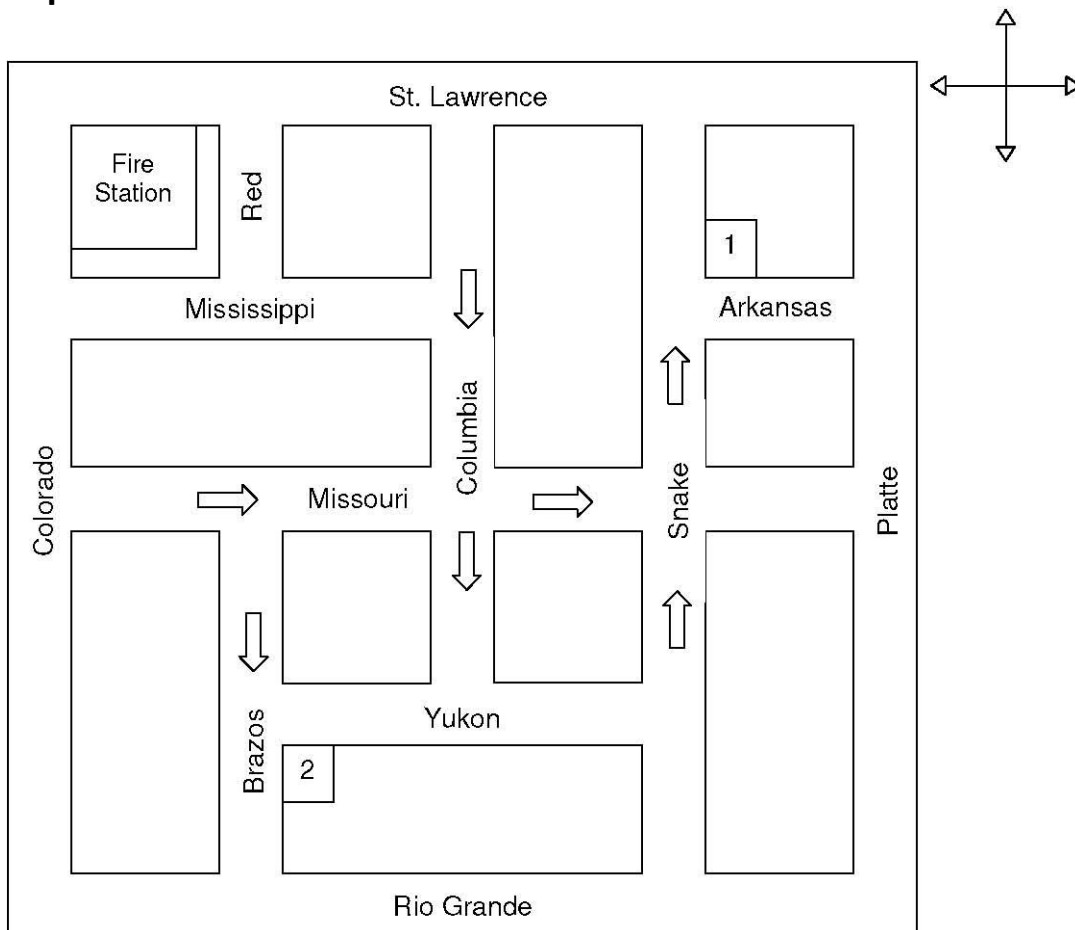
## Maps – Spatial Scanning

Directional orientation is a well-documented ability for good firefighters. This ability assists firefighters to respond to urgent situations and go from one point to another more efficiently.

In the exam, you will be presented with a map or plot diagram. Based on this map or diagram, you will answer questions related to the most direct route from one point to the next.

### Example Questions

#### Map 1



**Refer to Map 1 to answer the following questions.**

From the fire station, you are to drive to the northeast corner of Snake and Arkansas (#1). Without violating any traffic laws, which of the following is the shortest and most direct route to the corner?

- a. east on St. Lawrence, south on Snake
- b. south on Colorado, east on Missouri, south on Columbia, east on Yukon, north on Snake
- \* c. south on Colorado, east on Missouri, north on Snake
- d. east on St. Lawrence, south on Columbia, east on Yukon, north on Snake

From the fire station, you are to drive to the southeast corner of Brazos and Yukon (#2). Without violating any traffic laws, which of the following is the shortest and most direct route to the corner?

- \* a. south on Colorado, east on Missouri, south on Brazos
- b. south on Colorado, east on Rio Grande, north on Brazos
- c. east on St. Lawrence, south on Columbia, west on Yukon
- d. east on St. Lawrence, south on Snake, west on Yukon



**Flexibility of Closure**

In this type of question, a picture of something related to fire suppression is presented along with four possible pictures below. Three of the four are slightly altered. You will be asked to identify which of the four pictures is exactly the same as the original picture given.

Read all instructions carefully. Your strategy should be to eliminate as many of the four choices as possible by focusing on the details of the given pictures, such as numbers, letters, or any other identifying information. Examine the choices one at a time until you have eliminated three of the four pictures. Double check all of the details of the original picture with the one you have chosen and verify that they are the same.

### Example Question

A picture is placed above the question and four pictures are placed below it. You must choose the one picture that is an identical match.



Which of the following is the same as the above label?

- a. A
- b. B
- c. C
- d. D

\*



## **CONCLUSION**

We know that this is an important day for you. We wish you the best of luck in this process.